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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,100	09/16/2003	Peter Blakeborough Kenington	1052.043	1636

22186 7590 01/25/2006
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EXAMINER

LE, LANA N

ART UNIT PAPER NUMBER

2685

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/663,100

Applicant(s)

KENINGTON, PETER
BLAKEBOROUGH

Examiner

Lana N. Le

Art Unit

2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 5, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Hashimoto et al (US 2002/0,169,731).

Regarding claim 1, Hashimoto et al disclose a radio transmitter (fig. 7) for transmitting signals in a designated frequency band comprising:

a transmit filter (101) adapted to filter a signal to be transmitted from the transmitter to suppress the transmission of parts of the signal outside the band (para. 56); and

a compensating filter (feed-forward filter 700; fig. 6) adapted to filter the signal upstream from the transmit filter (para. 18), wherein:

the compensating filter (700) is adapted to alter the signal to counteract at least one of a phase ripple (phase compensation), an amplitude ripple (amplitude), and a group delay variation of the transmit filter within the band (para. 43, 22).

Regarding claim 2, Hashimoto et al disclose a transmitter according to claim 1, wherein the compensating filter (700) is adapted to alter the signal to counteract the phase ripple of the transmit filter within the band (para. 43).

Regarding claim 3, Hashimoto et al disclose transmitter according to claim 1, wherein the compensating filter (700) is adapted to alter the signal to counteract the amplitude ripple of the transmit filter within the band (paras. 11-12).

Regarding claim 5, Hashimoto et al disclose a transmitter according to claim 1, wherein the compensating filter (700) is adapted to alter the signal to counteract at least two of the phase ripple, the amplitude ripple, and the group delay variation of the transmit filter within the band (feedforward filter for phase compensation added to IIR filter for amplitude compensation; para. 12, 18).

Regarding claim 17, Hashimoto et al disclose a method for transmitting signals in a designated frequency band, comprising:

transmit filtering (via 101) a signal to be transmitted to suppress the transmission of parts of the signal outside the band (para. 56); and compensation filtering (via 700; fig. 6) the signal upstream from the transmit filtering (para. 18), wherein the compensation filtering alters the signal to counteract at least one of a phase ripple, an amplitude ripple, and a group delay variation of the transmit filtering within the band (paras. 43, 22).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4, 6, 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (US 2002/0,169,731) in view of Hadjichristos (US 2004/0,219,891).

Regarding claim 4, Hashimoto et al disclose a transmitter according to claim 1, wherein Hashimoto does not disclose the compensating filter is adapted to alter the signal to counteract the group delay variation of the transmit filter within the band. Hadjichristos discloses the compensating filter is adapted to alter the signal to counteract the group delay variation of the transmit filter within the band (paras. 67-68). It would have been obvious to one of ordinary skill in the art at the time the invention was made to alter the signal to change the group delay variation in order to reduce adjacent channel power ratio (paras. 8, 13).

Regarding claim 6, Hashimoto et al disclose a transmitter according to claim 1, wherein Hashimoto et al the compensating filter is adapted to alter the signal to counteract the phase ripple, the amplitude ripple. Hadjichristos discloses the compensating filter is adapted to alter the signal to counteract the group delay variation of one of phase modulation and amplitude modulation of the transmit filter within the band (para. 13). It would have been obvious to one of ordinary skill in the art at the time

the invention was made to alter the signal of Hashimoto et al to also include the group delay in order to reduce adjacent channel power ratio.

5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto et al (US 2002/0,169,731) in view of Uriu et al (US 2003/0,092,397).

Regarding claim 16, Hashimoto et al discloses radio transceiver (fig. 7) for transmitting signals in a designated frequency band, comprising:

a transmit filter (101) adapted to filter a signal to be transmitted from the transmitter to suppress the transmission of parts of the signal outside the band (para. 56); and

a compensating filter (700; fig. 6; 104 of fig. 7), operating in the digital domain (IIR digital filter), adapted to filter the signal upstream from the transmit filter (para. 18);

an antenna (103) adapted to allow signals to be transmitted to and from the transceiver (para. 103);

a receiver facet (107; fig. 7) adapted to receive signals arriving at the antenna; and wherein the compensating filter is adapted to alter the signal to counteract at least one of a phase ripple, an amplitude ripple, and a group delay variation of the transmit filter within the band. Hashimoto et al do not disclose a diplexer adapted to allow the signal to be sent towards the antenna and further adapted to pass signals from the antenna to the receiver facet. Uriu et al disclose a diplexer (82, 83; fig. 10) adapted to allow the signal to be sent towards the antenna and adapted to pass signals from the antenna to the receiver facet (para. 207, 127). It would have been obvious to one of

ordinary skill in the art at the time the invention was made to add the diplexer of Uriu to Hashimoto in order to pass signals of the high frequency band without being attenuated over a wide frequency band as suggested by Uriu et al (para. 34).

6. Claims 7-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (US 2002/0,169,731) in view of Wright (US 6,973,138).

Regarding claim 7, Hashimoto et al disclose a transmitter (fig. 7) according to claim 1, wherein Hashimoto et al do not disclose the transmitter further comprising: an assessor adapted to compare the signal upstream from the transmit filter with the signal downstream from the transmit filter in order to provide an indication of residue of at least one of phase ripple, amplitude ripple, and group delay variation within the band; and a controller adapted to adjust the compensating filter, under the guidance of the assessment performed by the assessor, to reduce the residue. Wright discloses the transmitter further comprising an assessor (312) adapted to compare the signal upstream from the transmit filter with the signal downstream from the transmit filter in order to provide an indication of residue of at least one of phase ripple, amplitude ripple, and group delay variation within the band (col 5, lines 55-65; col 8, lines 16-38); and a controller (312) adapted to adjust the compensating filter, under the guidance of the assessment performed by the assessor, to reduce the residue (col 8, lines 16-38). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have an assessor within the processor of Hashimoto et al in order to minimize power in the digital error signal by adjusting the filter's phase and/or delay as suggested by Wright (col 8, lines 29-32).

Regarding claim 8, Hashimoto et al disclose a transmitter according to claim 1, wherein Hashimoto et al disclose a lineariser (700) adapted to counteract distortion introduced to the transmission signal (adding distortion; para. 6). Hashimoto et al do not disclose the transmitter further comprising a power amplifier adapted to amplify the signal in readiness for transmission. Wright discloses the transmitter comprising a power amplifier (126; fig. 3) adapted to amplify the signal in readiness for transmission and a lineariser to counteract distortion in the power amplifier (col 6, lines 52-56; col 4, lines 41-46). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the transmitter of Hashimoto et al comprise a power amplifier in order to strengthen the signal before transmission and predistort to cancel nonlinearities as suggested by Wright (col 2, lines 21-23).

Regarding claim 9, Hashimoto et al and Wright disclose the transmitter according to claim 8, wherein Wright discloses the lineariser (114, 312) to sample the signal downstream from the amplifier and downstream from the transmit filter (316) to provide a measure of distortion caused by the amplifier (col 4, lines 21-46).

Regarding claim 10, Hashimoto et al and Wright disclose the transmitter according to claim 8, wherein Wright discloses the lineariser (312, 114) is further adapted to counteract distortion introduced to the signal by the transmit filter (316) (col 9, lines 5-11).

Regarding claim 11, Hashimoto et al and Wright disclose the transmitter according to claim 8, wherein Wright discloses the lineariser is adapted to sample the signal downstream from the amplifier and downstream from the transmit filter to provide

a measure of distortion caused by the transmit filter and the amplifier (col 9, lines 5-11; col 8, lines 16-38).

Regarding claim 12, Hashimoto et al and Wright disclose transmitter according to claim 8, wherein Wright discloses the lineariser (114) is a predistorter for altering the signal upstream from the amplifier (col 4, lines 21-46).

Regarding claim 13, Hashimoto et al and Wright disclose a transmitter according to claim 8, wherein Wright discloses the transmitter comprising a feed back path (132) adapted to sample the signal downstream from the amplifier for use in adjusting the lineariser (114); and a switch in the path adapted to allow the sampling of the signal to occur downstream of the transmit filter for use in adjusting the compensating filter (314) or upstream from the transmit filter (316) (col 9, lines 5-11; col 8, lines 16-38).

Regarding claim 14, Hashimoto et al and Wright disclose the transmitter according to claim 8, wherein Wright discloses the transmitter further comprising a feedback path (132) adapted to sample the signal downstream from the amplifier (126) and from the transmit filter (316) for use in adjusting the lineariser (312) and the transmit filter (316); and a correcting filter (314) adapted to correct the sampled signal as used by the lineariser for the effect of roll-off in the characteristic of the transmit filter (col 8, lines 16-38).

Regarding claim 15, Hashimoto et al and Wright disclose a transmitter according to claim 1, wherein the compensating filter (IIR digital filter) is adapted to operate in the digital domain (fig. 6).

Conclusion

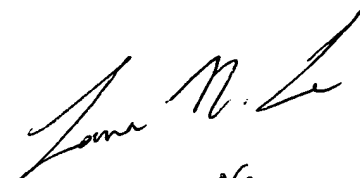
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lana N. Le whose telephone number is (571) 272-7891. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lana Le

January 12, 2006



01-12-06

**LANA LE
PRIMARY EXAMINER**